

Electrolyzer for NASA Lunar Regenerative Fuel Cells, Phase II

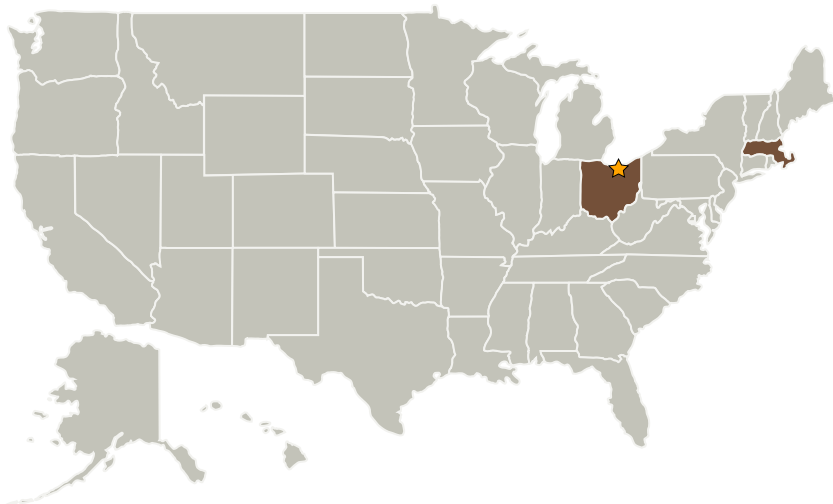
Completed Technology Project (2009 - 2011)



Project Introduction

Water electrolyzer stacks are a key component of regenerative fuel cells, designed to replace batteries as a means of storing electric energy on the lunar surface. The delivery of a 2,000 psi balanced pressure, lightweight prototype electrolyzer is proposed. The cell design will be significantly smaller and lighter, and capable of higher pressure operation than previous aerospace electrolyzers designed and built by Giner Electrochemical Systems, LLC. The successful completion of Phase I yielded test data, trade studies, a thin frame design, and model enhancements that would provide the basis of stack sizing. In a Phase II program, an enhanced, 2,000 psi test stand will be created by upgrading the existing 1,200 psi stand. It will then be used to demonstrate thin frame designs, the robustness of internal components, and the innovative prototypical compression hardware at realistic conditions. Further advances in thin frame technology will be investigated, and additional analyses of a new thermoplastic material will be conducted with the prospect of using them in the deliverable if these technologies are ready.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Giner Electrochemical Systems, LLC	Supporting Organization	Industry	Newton, Massachusetts

Primary U.S. Work Locations

Massachusetts	Ohio
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Project Transitions

 **February 2009:** Project Start **May 2011:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.2 Energy Storage
 - └ TX03.2.2 Electrochemical: Fuel Cells